

CLAIMS

What is claimed is:

1 1. A hydrodynamic coupling device comprising a housing which is
2 rotatable about an axis of rotation, a turbine wheel mounted for rotation with respect to
3 said housing, and a bridging clutch for transmitting torque between the housing and the
4 turbine, said bridging clutch comprising:

5 a first friction element which is essentially fixed against rotation with
6 respect to said housing, said first friction element having an axially facing first friction
7 surface;

8 at least one second friction element which is essentially fixed against
9 rotation with respect to said turbine, said second friction element having an axially
10 facing second friction surface which can contact said first friction surface;

11 a first channel in one of said friction surfaces, said first channel having first
12 channel sections with radially closed inner ends and second channel sections with
13 radially closed outer ends; and

14 a circumferentially extending second channel in the other of said friction
15 surfaces, said second channel being arranged so that, in a first relative rotational
16 position of said friction elements, parts of the other of said friction surfaces are opposite
17 said second channel, and so that, in a second relative rotational position of said friction
18 elements, said parts are in contact with said one of said friction surfaces, said second
19 channel establishing a fluid conducting connection between said first channel sections

20 and said second channel sections when said first friction surface contacts said second
21 friction surface.

1 2. A hydrodynamic coupling device as in claim 1 wherein said second
2 channel is arranged at a radial distance from said axis of rotation, said distance
3 changing in a circumferential direction.

1 3. A hydrodynamic coupling device as in claim 1 wherein said second
2 channel is shaped as a circle having a center which is eccentric to said axis of rotation.

1 4. A hydrodynamic coupling device as in claim 3 wherein said second
2 channel has a radial width, said center of said circle being offset from said axis of
3 rotation by an eccentricity which is at least half said radial width.

1 5. A hydrodynamic coupling device as in claim 1 wherein said second
2 channel is shaped as an ellipse.

1 6. A hydrodynamic coupling device as in claim 1 wherein said channel
2 is profiled with circumferentially extending waves.

1 7. A hydrodynamic coupling device as in claim 1 wherein the other of
2 said friction surfaces is metal.

1 8. A hydrodynamic coupling device as in claim 7 wherein the one of
2 said friction surfaces is formed by a friction lining.

1 9. A hydrodynamic clutch device as in claim 1 wherein the other of
2 said friction elements has axially facing mutually opposed friction surfaces and a
3 circumferentially extending second channel in each of said mutually opposed friction
4 surfaces.

1 10. A hydrodynamic coupling device as in claim 9 wherein said second
2 channels have essentially similar shapes but are angularly offset from each other.

1 11. A hydrodynamic coupling device as in claim 1 wherein said second
2 surface channel has at least one circumferential interruption.